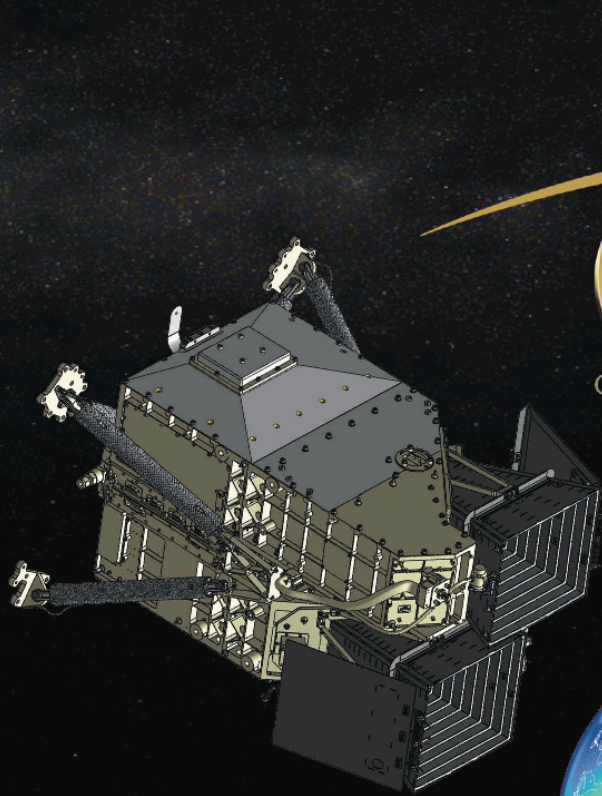
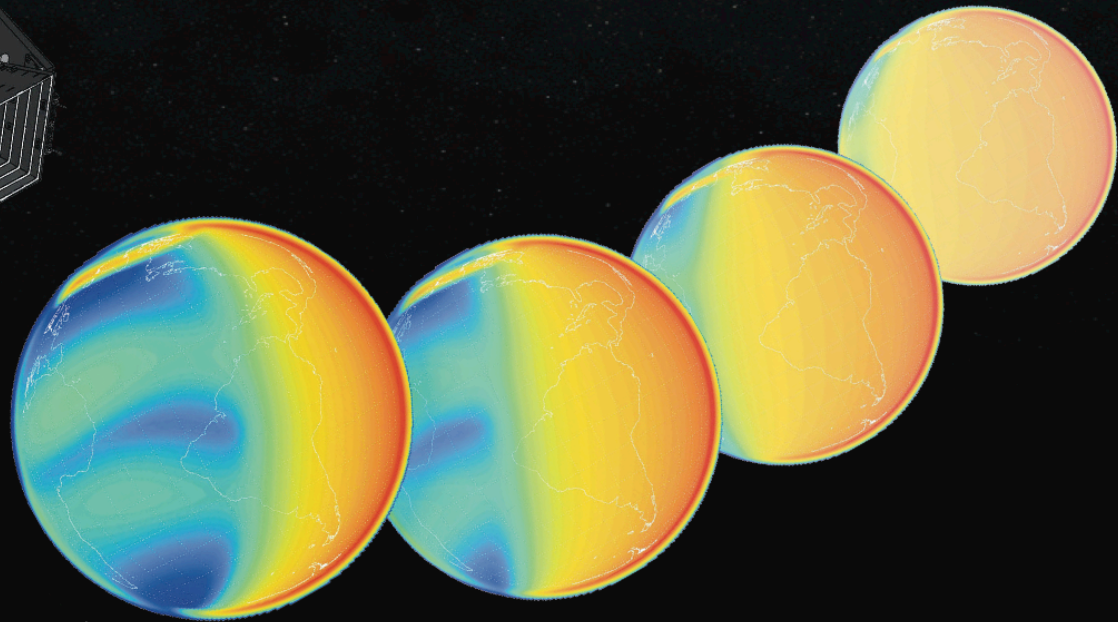


National Aeronautics and Space Administration



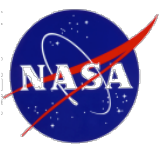
GOLD

Global-scale Observations of the Limb and Disk



www.nasa.gov

Revolutionizing our understanding of the space environment

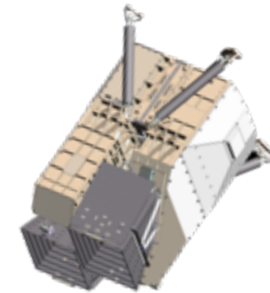
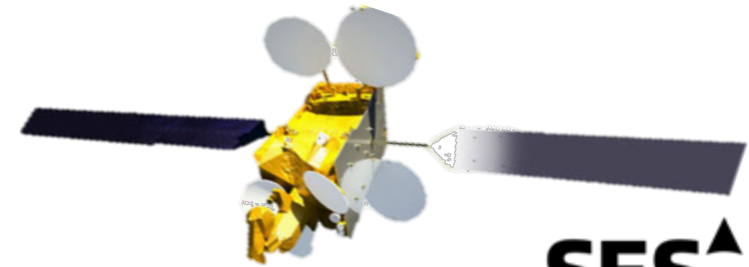


GOLD Mission Overview



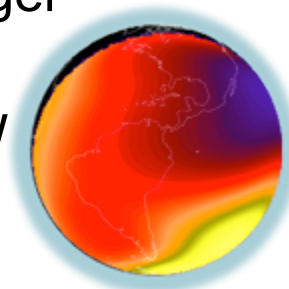
- **Host Mission**

- SES-14, a GEO Satellite is a GEO commercial communications satellite at 47.5°W
 - Satellite is a Eurostar 3000e built by Airbus Defence & Space (Toulouse, France)
 - Launched on Ariane 5, Jan 25, 2018
- Owned and operated by SES (Betzdorf, Luxembourg)

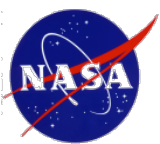


- **GOLD Instrument**

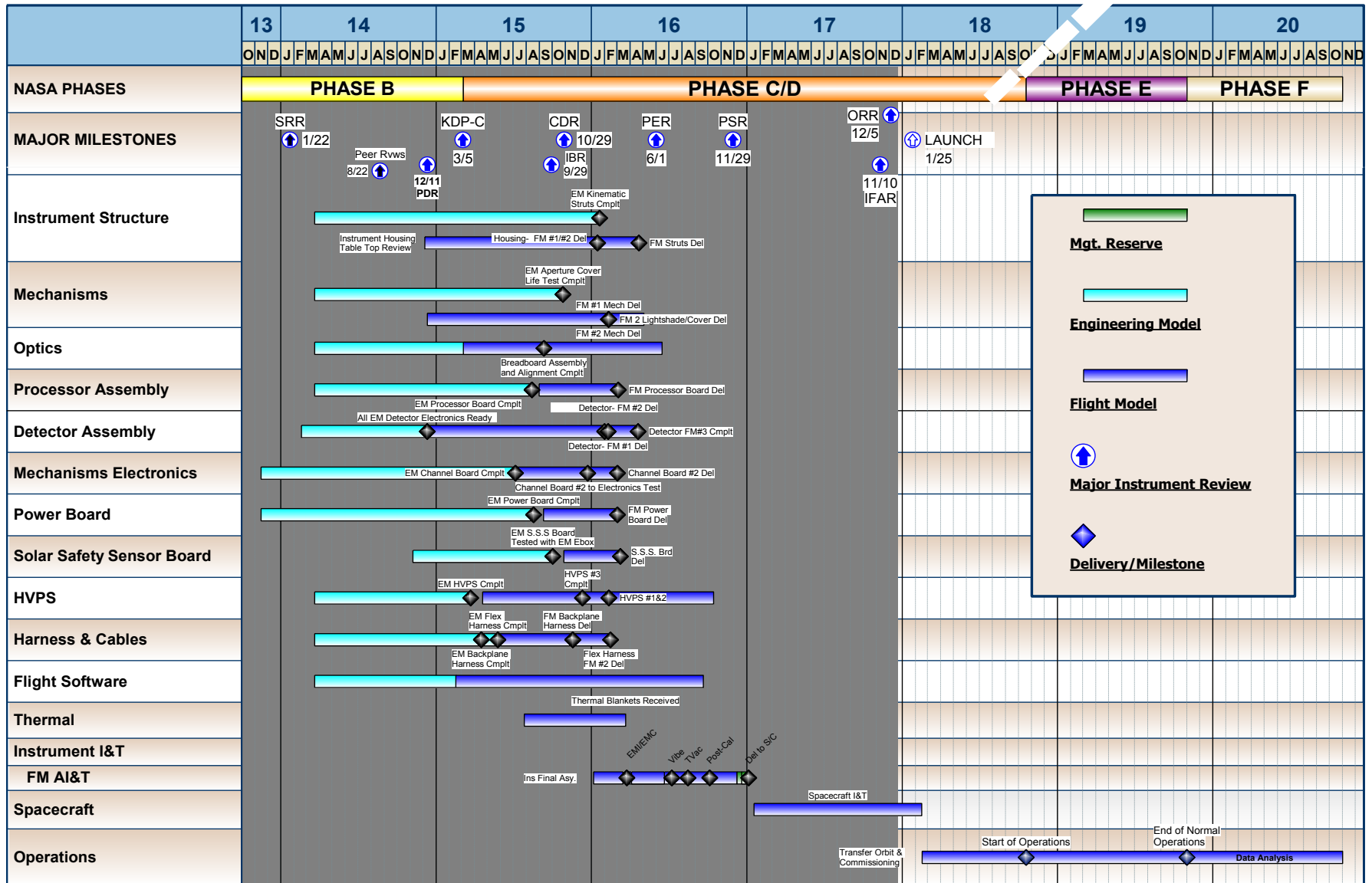
- Hosted payload is an ultraviolet imager developed by UCF/LASP
- Payload allocations are 42 kg, 90 W avg. power, 6 Mbit/s data down-link

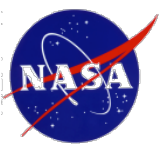


- **Science Data Center at UCF**

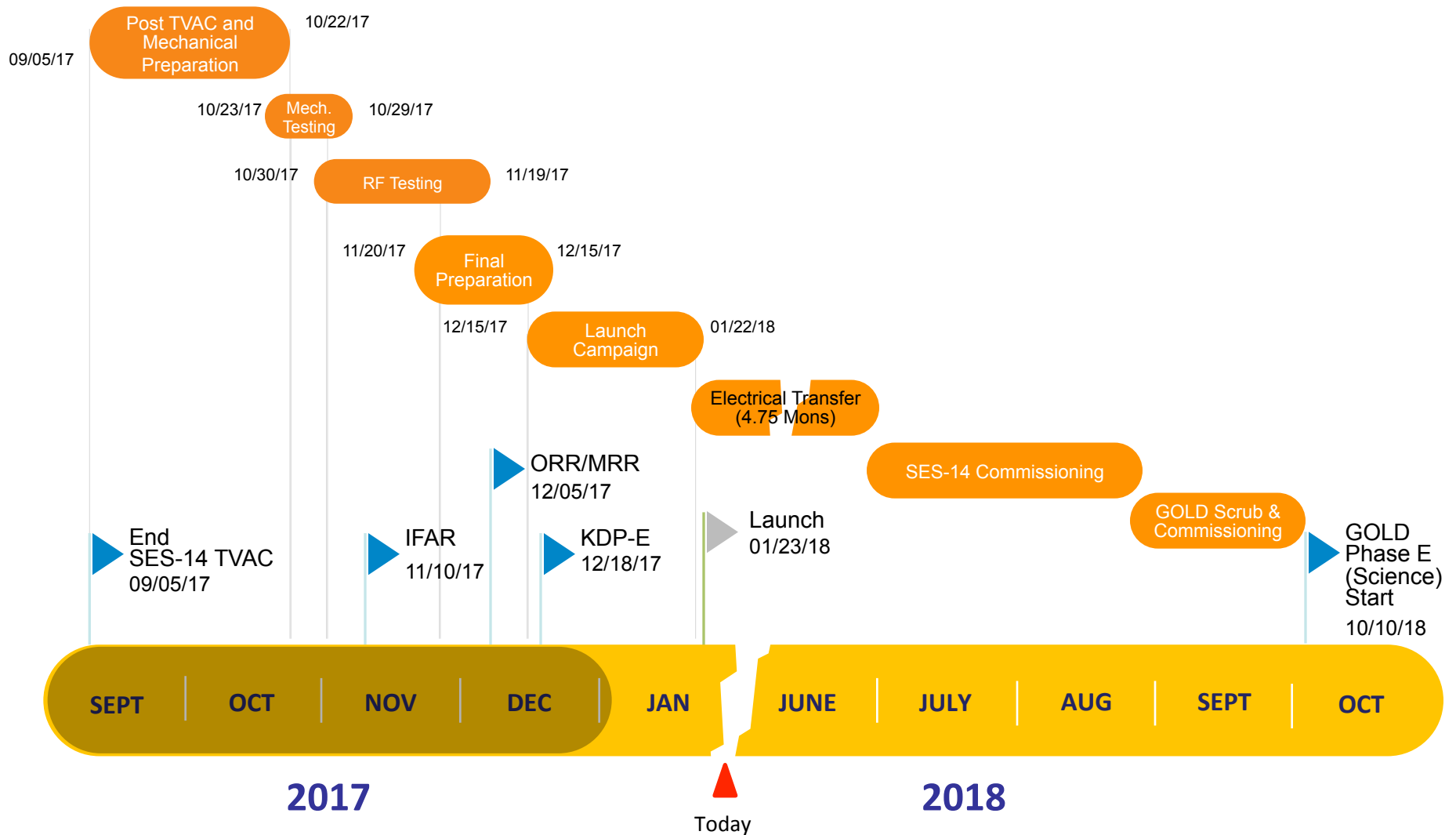


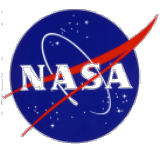
GOLD Schedule to date





GOLD 2017/2018 Timeline





Hosted Payloads = Cost Savings



HOSTED PAYLOADS

Why hosted payloads are a clear choice

SES[▲]
GOVERNMENT
SOLUTIONS



On Orbit | On Contract



2011
CHIRP
SES - 2



2012
EGNOS I
SES - 5



2012
EGNOS II
ASTRA 5B

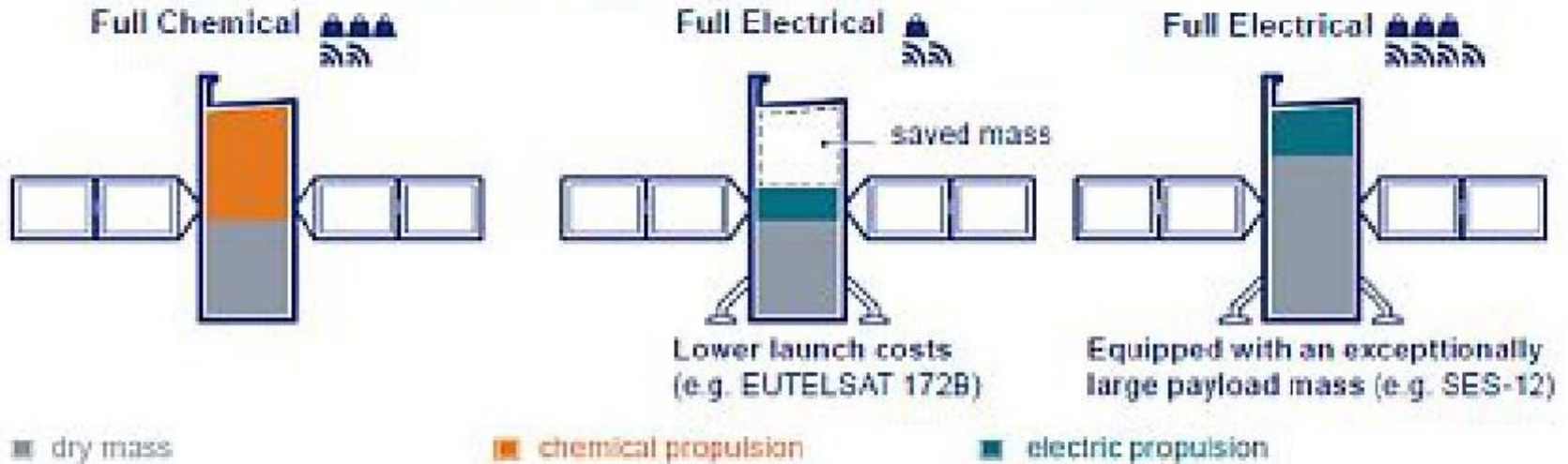


2015
WAAS
SES - 15



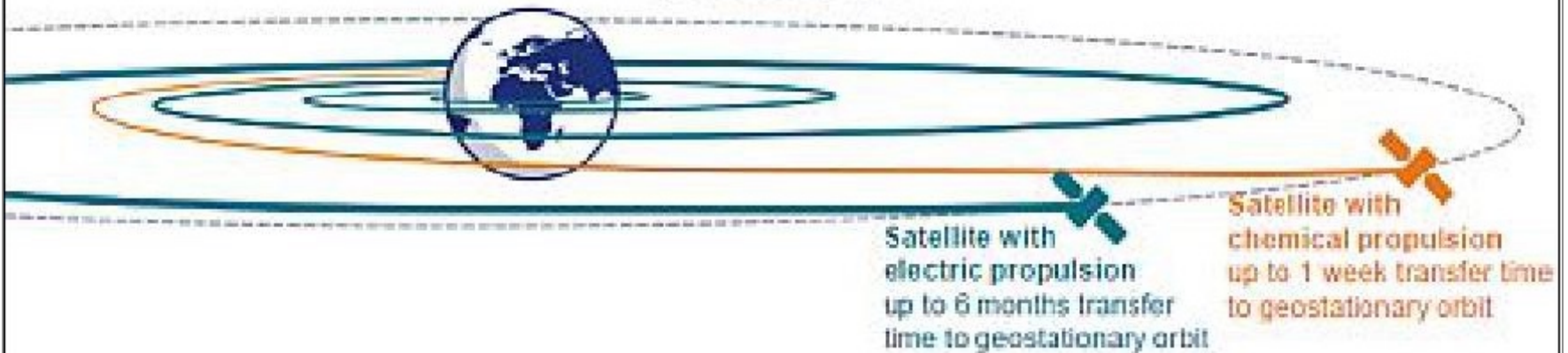
2015
GOLD
SES - 14

40% lower launch mass compared to similar chemical propulsion satellites

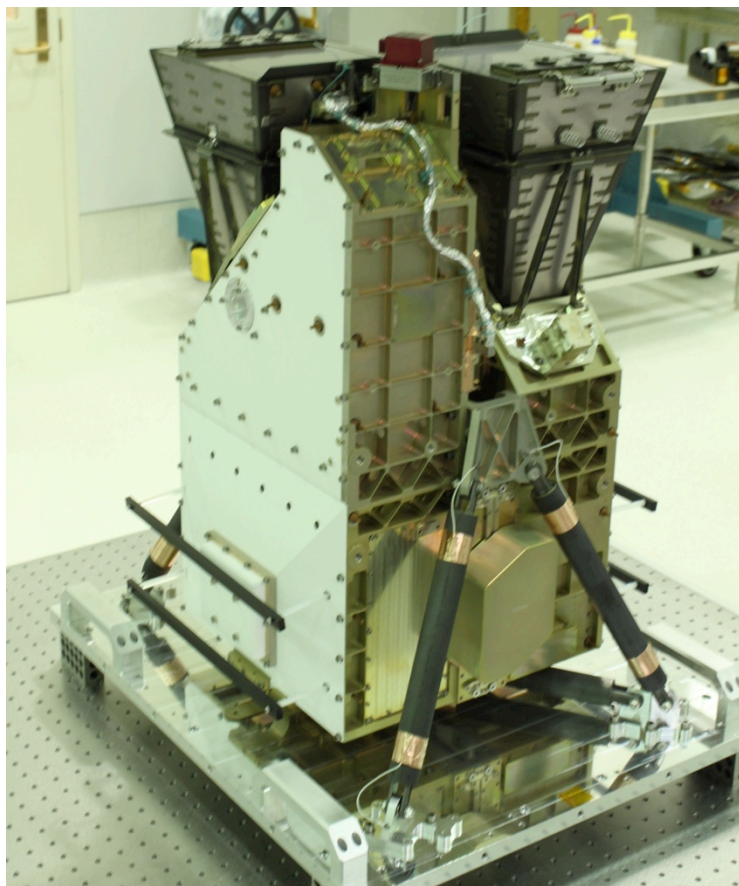


Transfer time to geo orbit

geostationary orbit



Electrical Propulsion takes longer to get to GEO but enables lighter/ cheaper launch



GOLD Instrument: Designed, built and tested by LASP, Boulder, CO, USA
Instrument Testing: Thermal Vacuum, Instrument Calibrations, Vibration Testing, Shock Testing and EMI/ EMC Testing



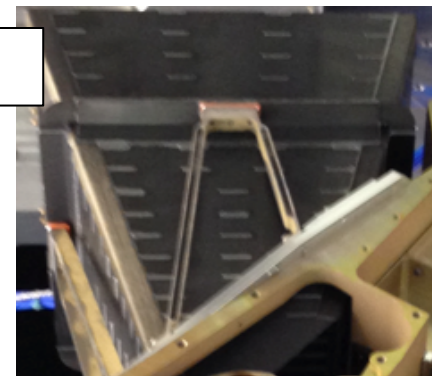
GOLD Instrument Configuration



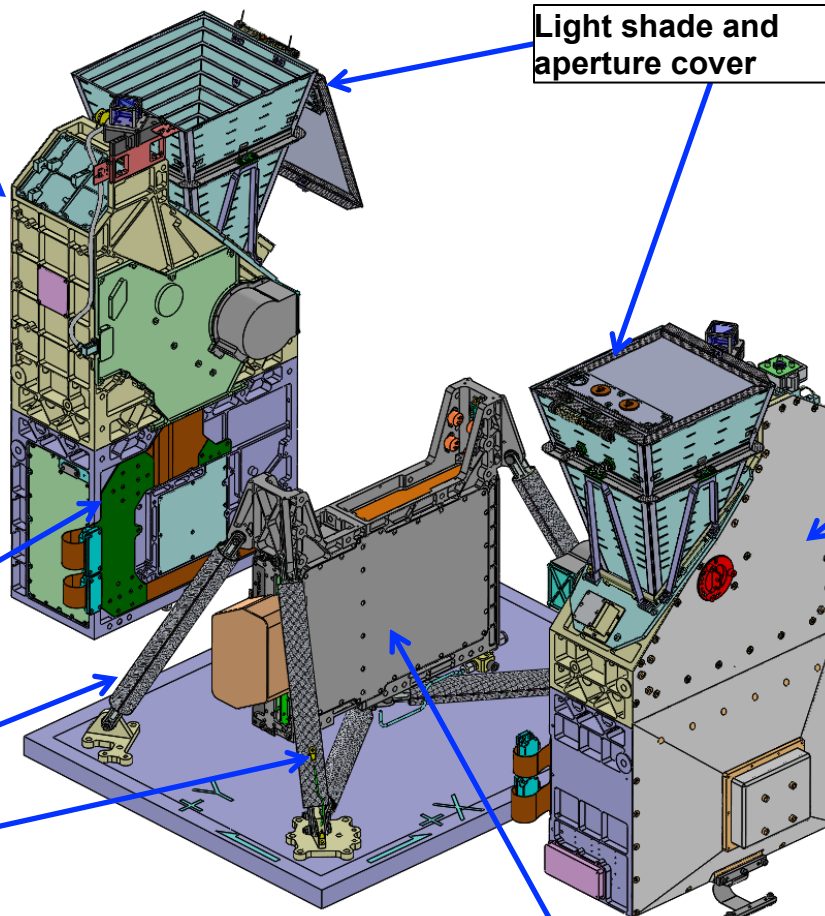
Channel Housing 2



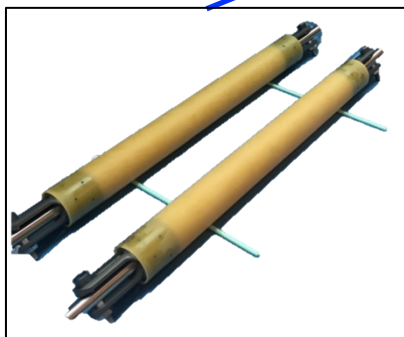
Light shade and aperture cover



Channel Housing 1

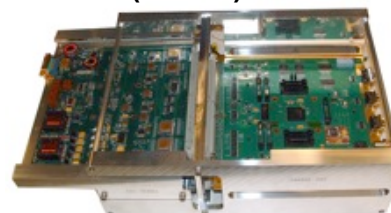


Flex-Circuit harnessing
(FM fabrication underway)

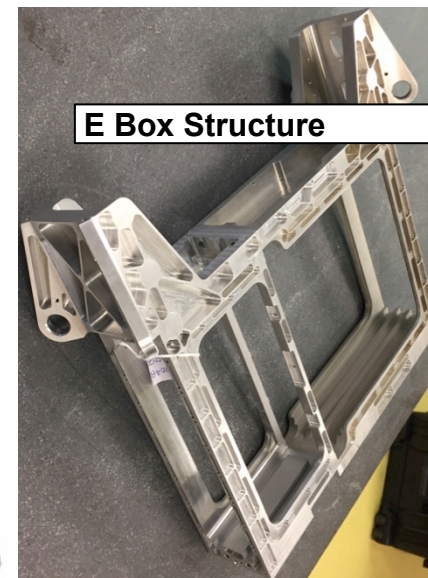


Kinematic struts (6x)

Electronics Box (E-Box)

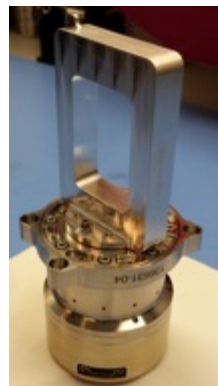


E Box Structure

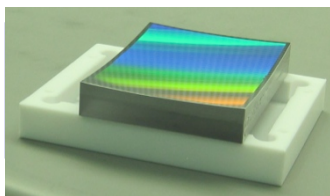




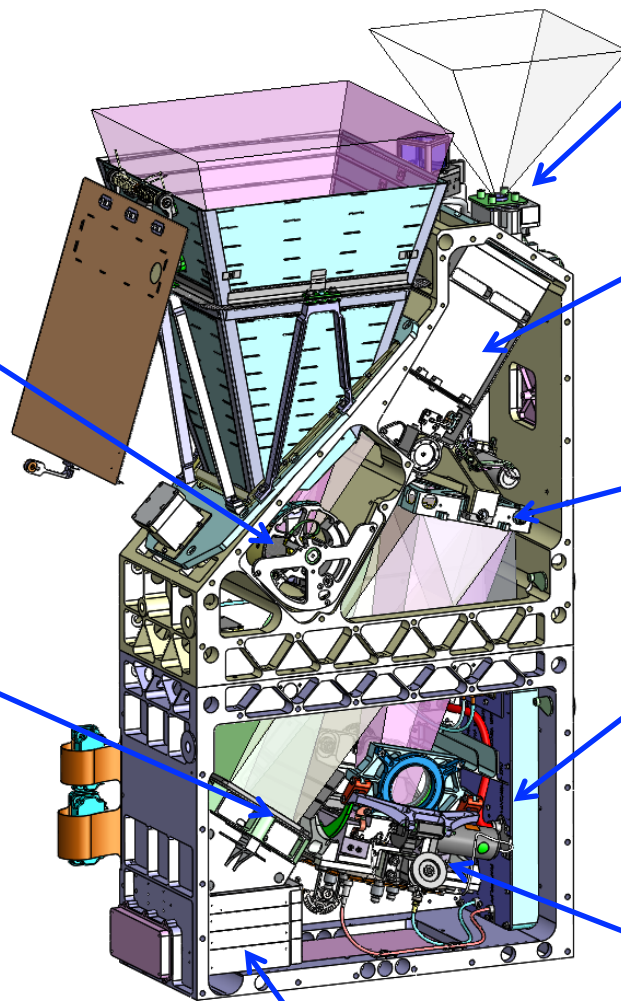
GOLD Channel 1 Configuration



Scan Mechanism with Sun Visor, precision encoder



GOLD Optics



Solar Safety Sensor (Channel only)

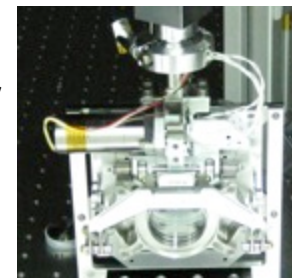
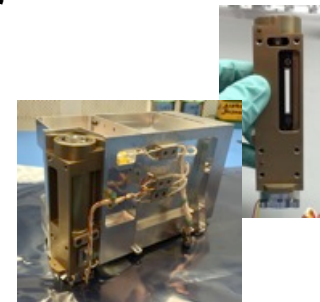
Telescope Slit Mechanism

Grating Yaw Mechanism

HVPS

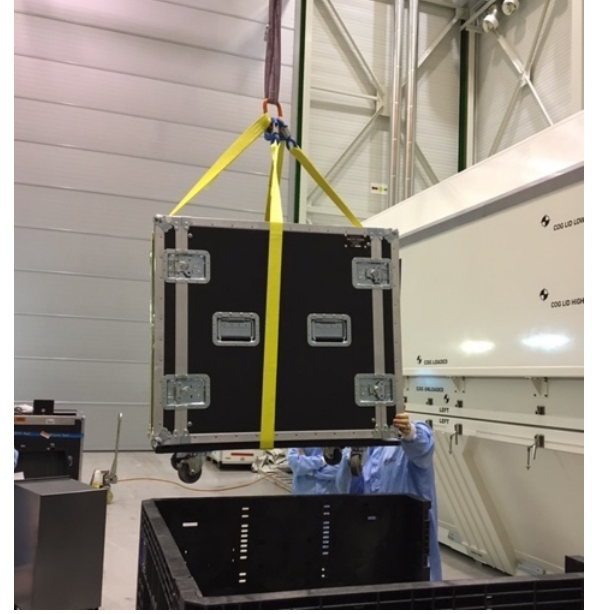
XDL MCP Detector Assembly with door

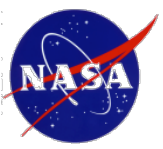
Detector Electronics



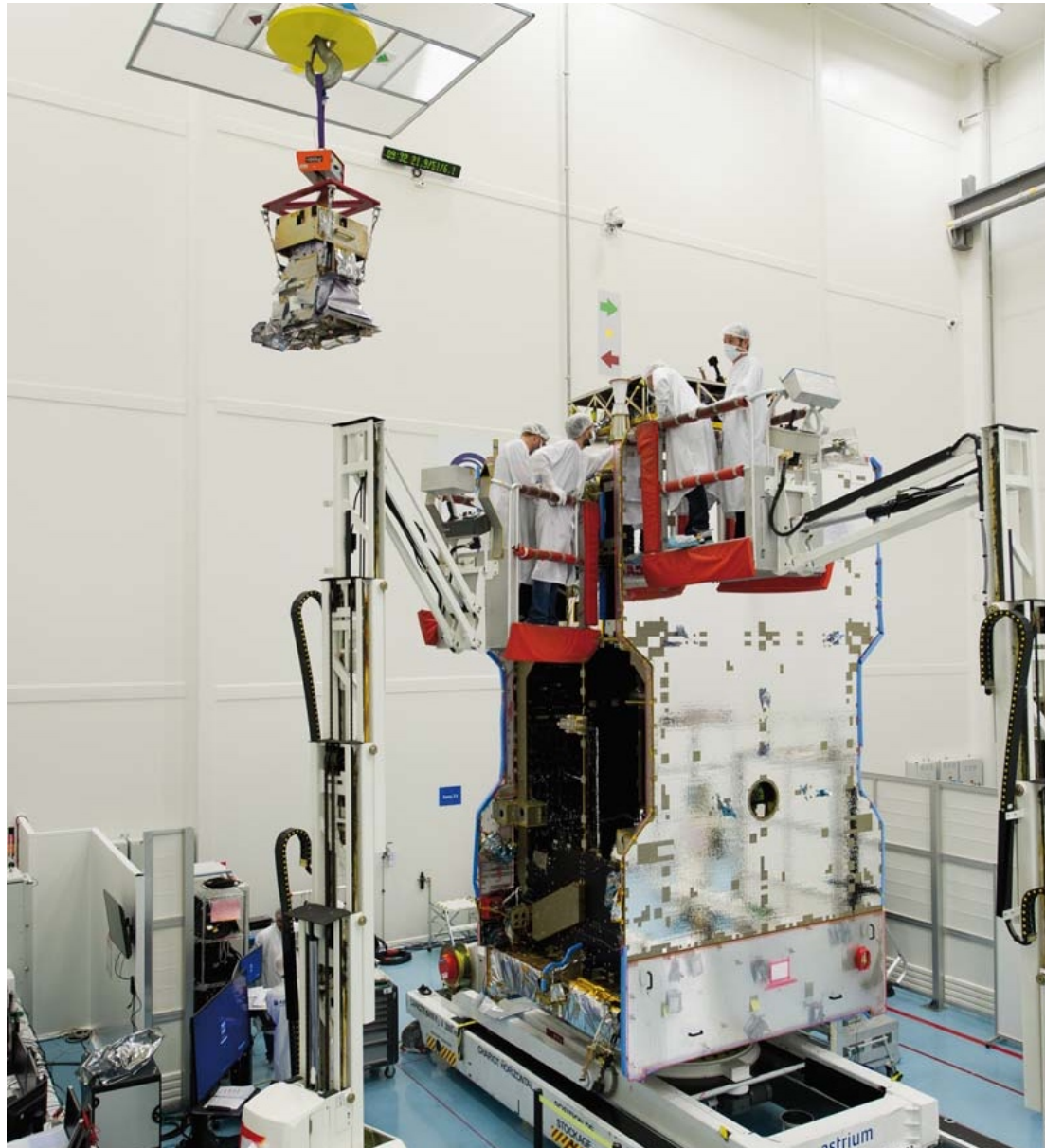


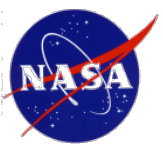
GOLD unpacking of shipping containers and instrument at Airbus Assembly, Integration and Test (AIT) facility in Toulouse, France (Jan 2017)



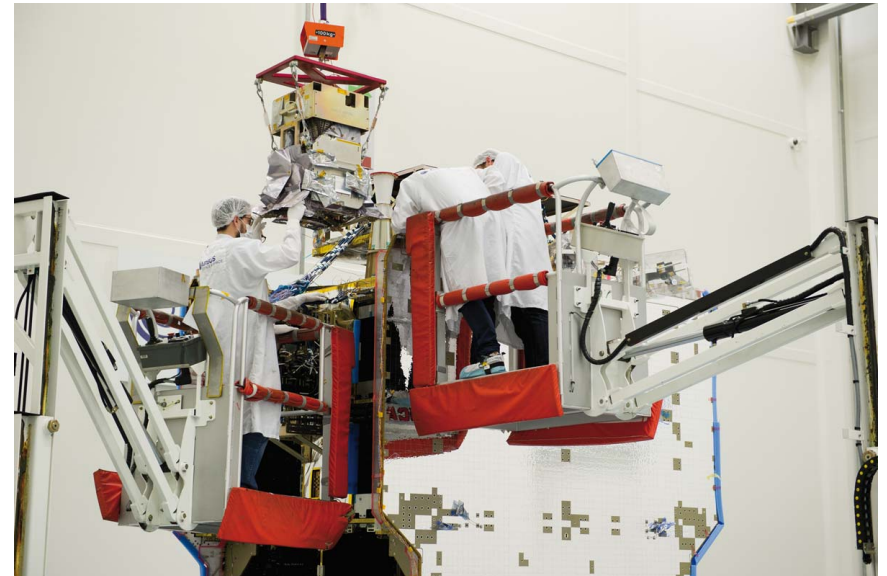


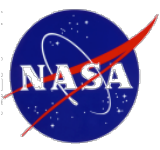
GOLD Integration onto SES-14





GOLD Integration onto SES-14





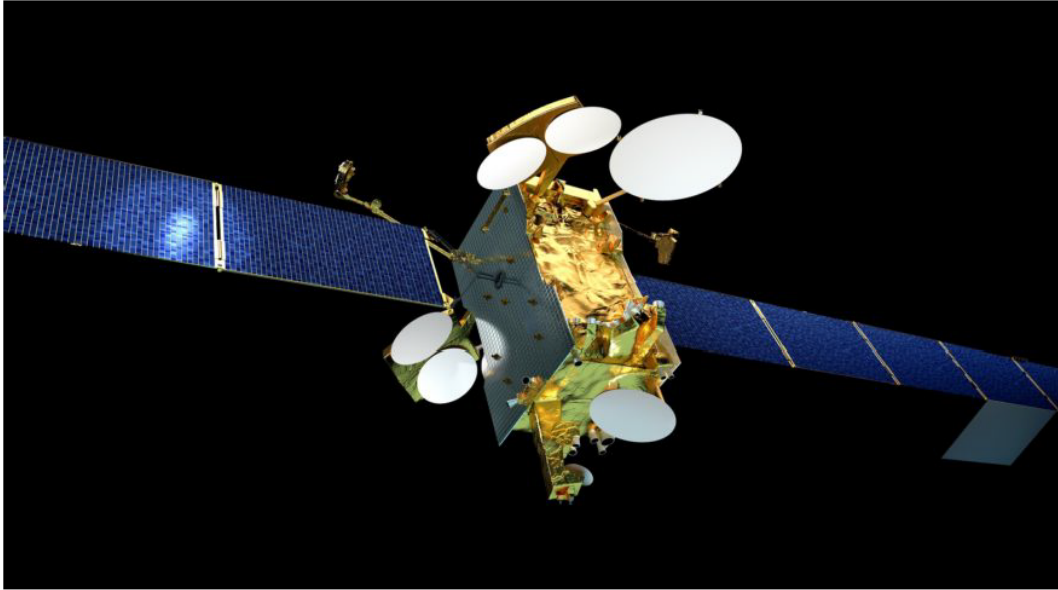
SES-14 Video



Courtesy Airbus Defense & Space

SES flips SpaceX, Arianespace launches to speed NSS-806 replacement

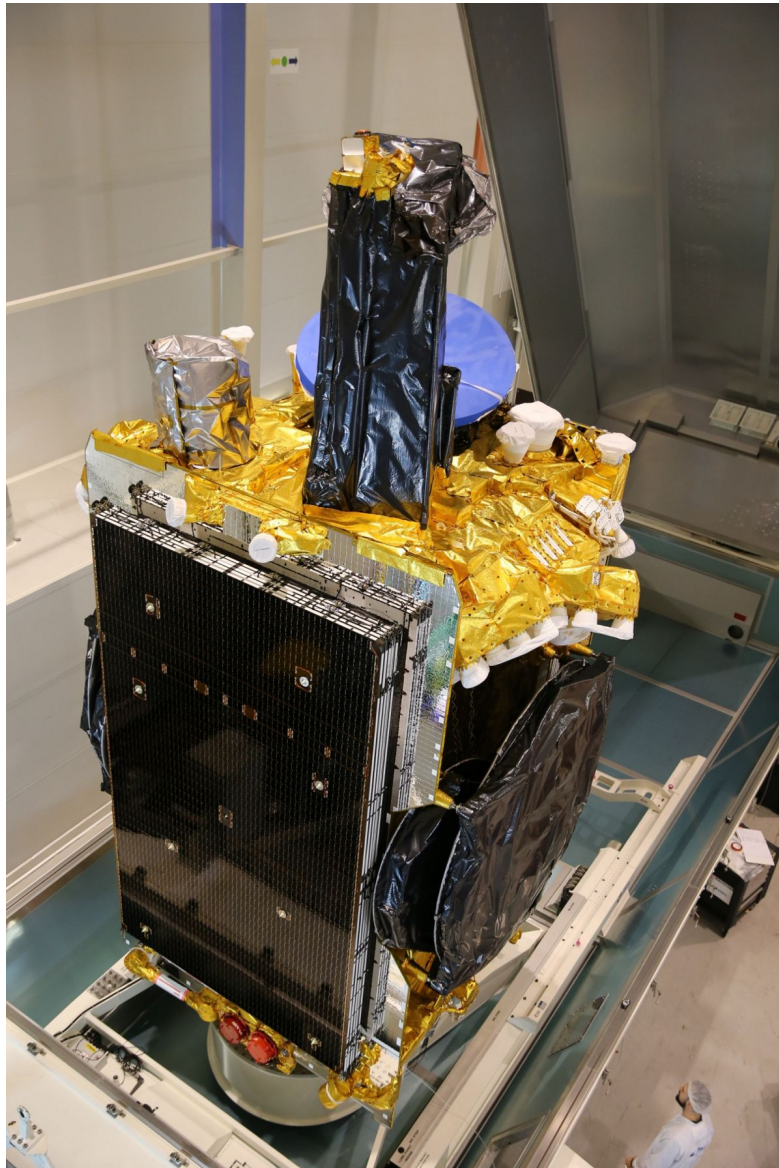
by [Caleb Henry](#) — August 28, 2017

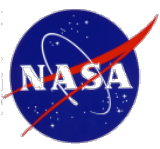


Hawthorne, California-based SpaceX, previously contracted to launch SES-14, will instead launch SES-12. Arianespace of Evry, France, will launch SES-14 on an Ariane 5 rocket during the first quarter of 2018, saving “a couple of weeks” on bringing the satellite into service, according to SES spokesperson Markus Payer.

Both satellites were expected to launch this year when SES signed the launch agreements in 2015. Payer said the Ariane 5 launch is in the earlier half the first quarter of 2018, while the Falcon 9 launch is in the latter half.

SES-14 Shipping Container

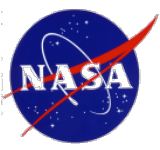




SES-14 Delivery to French Guiana

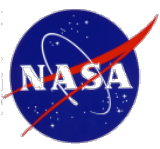






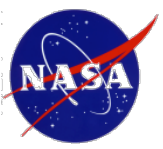
GOLD/ NASA Logos on Fairing





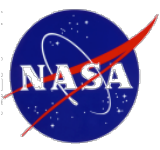
Ariane 5 Rollout to Launch tower





GOLD Team Ready to Launch

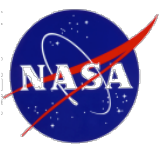




VA241 Launch Video



Courtesy Arianespace



GOLD Status Today

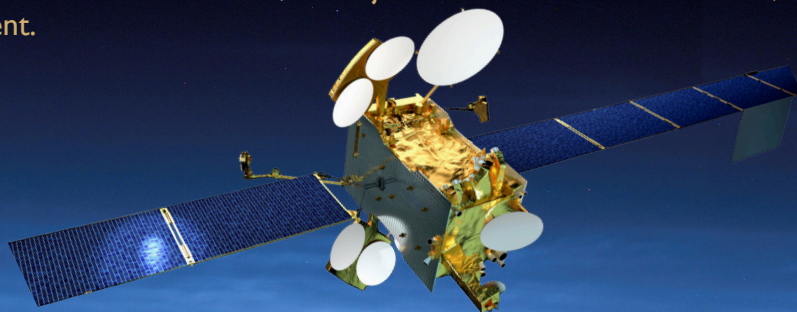


- GOLD successfully completed a quick power-on and venting operation post launch
- GOLD is currently powered OFF per plan and will remain off the the remainder of orbit raising
- GOLD commissioning in August 2018
- GOLD Science (Phase E) is scheduled to start during Oct 2018

Global-scale Observations of the Limb and Disk (GOLD) is a NASA mission of opportunity that will fly an ultraviolet (UV) imaging spectrograph on a geostationary satellite—at an altitude of 22,236 miles—to measure densities and temperatures in Earth's thermosphere and ionosphere.

The goal of the mission is to provide answers to key elements of an overarching question for heliophysics science: What is the global-scale response of the thermosphere and ionosphere to space weather above and the lower atmosphere below?

The measurements from GOLD will be used, in conjunction with advanced models, to revolutionize our understanding of the space environment.



GOLD will:

- provide unprecedented imaging of the Earth's upper atmosphere from geostationary orbit;
- be the first mission to study the weather of the thermosphere-ionosphere rather than its climate;
- make breakthrough measurements of temperature and composition that are important for satellite drag, and ionospheric disruptions of communication and navigation; and
- fly as a hosted payload on a commercial communications satellite, pioneering NASA's cost-effective access to geostationary orbit.

GOLD scheduled launch: early 2018



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Website: <http://gold.cs.ucf.edu>

